La Cueva High School team takes top award in 23rd New Mexico Supercomputing Challenge

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Clustering algorithms to find correlations, “meaningful” words, topics

LOS ALAMOS, N.M., April 23, 2013—A trio of Albuquerque La Cueva High School students – two who are siblings – took the prize in the 23rd New Mexico Supercomputing Challenge for their research project that used statistical analysis to identify and analyze topics in human language.

The team, Ari Echt-Wilson, Eli Echt-Wilson, and Justin Sanchez also won the CHECS Teamwork and Cray High Performance Computing awards for their project, “Learning and Analyzing Topics in Human Language.”

Los Alamos High School freshman Cole Kendrick took second place for his computer simulation project of Saturn's ring structure. Kendrick, who won the New Mexico Supercomputing Challenge's top prize in 2011 as a seventh-grade student, also received the Technical Poster Award, the Visualization prize from New Mexico Institute of Mining and Technology, and the Professional Presentation Award.

La Cueva High's Alexandra Porter received third place for her project "Simulation of Approximate Computing Applied to Numerical Methods." Porter was part of a La Cueva High team that took last year's third prize.

All the finalist teams received plaques for their school, a large banner suitable for hanging at their schools and other gifts.

Six other teams were finalists in the yearlong competition culminating in Tuesday's awards ceremony in Los Alamos.

The Supercomputing Challenge is open to any New Mexico high-school, middle-school or elementary-school student. More than 200 students representing 60 teams from schools around the state spent the school year researching scientific problems, developing sophisticated computer programs, and learning about computer science with mentors from the state's national laboratories and other organizations. The goal of the yearlong event is to teach student teams how to use powerful computers to analyze, model, and solve real-world problems. Participating students improve their understanding of technology by developing skills in scientific inquiry, modeling, computing, communications, and teamwork.

Other winners were:

- Moriarty High School received the Judges' Special Award for their project, " Electric Wind Shock." They also received the web-based Presentation of a Final Report award.
- Also winning judges' special awards were Academy for Technology and the Classics in Santa Fe, and Katrina Keller of Albuquerque's Jackson Middle School for her project, "Chickenpox."
- A Los Alamos High School team won the Best Graphical Poster Award for their project, "Numerical Modeling of Atmospheric Vortices." Their design will become next year's logo and will appear on t-shirts, the Challenge website, and teacher bags.
- Marcus Dominguez-Kuhne of Albuquerque Academy won the Newcomer Award for being an exceptional first-year participant; he also won the Epidemiology Award for his research on modeling disease propagation to predict the speed of an outbreak.
- Annunciation Catholic School received the Science Rocks Award for their project "Can the Great Pacific Garbage Patch be Eliminated with Plastic-Eating Microbes?" The team also received the LANL Environmental Award.
- A Santa Fe Prep School trio won the Agent-Based Modeling Award for their project, "Emergency Egress in the Case of a Fire."
- Centennial High School in Las Cruces received the Community Impact Award for their project, "Build a Better Bus Route."
- Melrose High School's Randall Rush received the New Mexico EPSCoR Climate Change/Water Resources award for his project, "9,000,000,000."
- Down to Earth School won the Magellan Award for navigating new waters for their project, "Predator Mayhem."

- Human-Computer Interaction, a new award, was given to a Los Alamos Middle School team for their project, “Headtracking: Controlling your Computer with your Head.”
- A Jackson Middle School team in Albuquerque received an award for modeling an ecosystem.
- A Los Alamos High School team won the CHECS Research Team Award for their project, “Lowrider to Flowrider Vehicle Aerodynamics and Aeromodding.”
- Sara Hartse of Desert Academy in Santa Fe and Rachel Robey of Los Alamos High School received the Women in Science and Engineering Award for their community involvement with younger students and presentations about computing. Twelve girls from schools around the state were recognized for their computing achievements, information technology aptitude, leadership ability and academic achievements by the National Center for Women and Information Technology.
- Desert Academy received the Programming Innovation Award in Python for their project, “Comparison of Optimization Techniques for Road Networks.”
- Stephen Chen of Los Alamos Middle School won the NetLogo and Sen. Martin Henrich Middle School award for “A Two-Step Policy Approach used in Cloud Web Service Scheduling Problems.”
- Teacher Recognition Awards were given to Janice Portillo of Edgewood Middle School, and Melody Hagaman of Centennial High, while Teri Roberts of Los Alamos’ Data and IT Quality Management Group received a Service award for her more than a dozen years volunteering in the Supercomputing Challenge.

More than $49,000 in individual scholarships were awarded on Tuesday, including $28,000 from the Laboratory’s Computer, Computational, and Statistical Sciences Division and Los Alamos National Security, LLC, which operates the Laboratory. Five students and their teachers also received $100 door prizes in random drawings.

The Supercomputing Challenge is sponsored by Los Alamos and Sandia national laboratories and Los Alamos National Security, LLC.

Educational partners include The Center for Connected Learning/NetLogo, CHECS, Eastern New Mexico University, MIT StarLogo, New Mexico Computing Applications Center, New Mexico EPSCoR, New Mexico Highlands University, New Mexico Institute of Mining and Technology, Northern New Mexico College, New Mexico Public Education Department, New Mexico State University, San Juan College, Santa Fe Community College, Santa Fe Institute, the University of New Mexico and the UNM Center for Advanced Research Computing, and NMSU-Doña Ana Community College.

Commercial partners are Lockheed Martin, Los Alamos National Laboratory Foundation, Abba Technologies/SGI, Google, The Math Works, Vandyke Software Inc., Gulfstream Group and bigbyte.cc, Technology Integration Group, Qforma, PY Multimedia Services, CAaNES, Cray Inc., Fourth Watch Software, New Mexico Technology Council and Redfish Group.